NAME: DATE:

Unit-2 Mastery Assessment (version 622)

Question 1 (10 points)

Let f represent a function. If $f[8] = 34$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x-15}{3}\right]}{2} - 6$$

Find the solution.

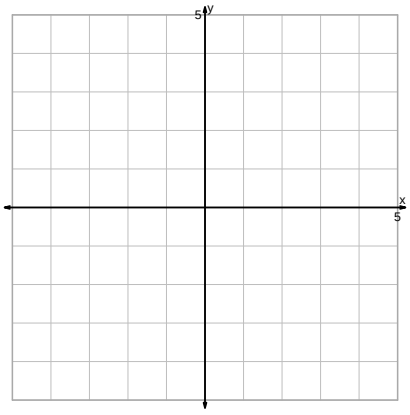
$x =$

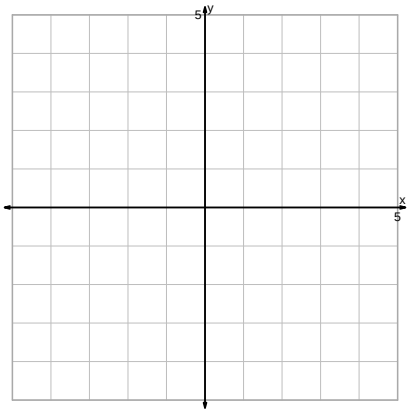
$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

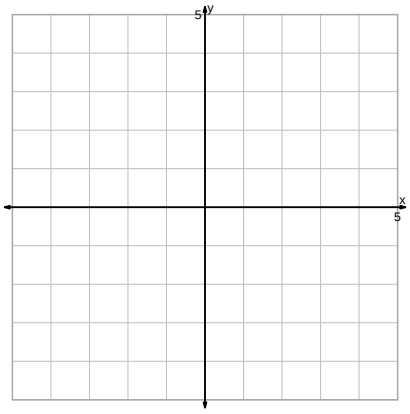
$y = (x-2)^2$

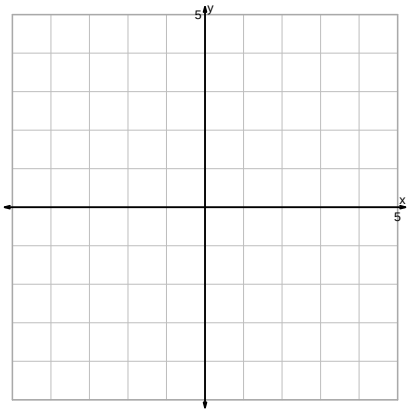




$y = 2^x + 2$

$y = 2 \cdot \sqrt{x}$

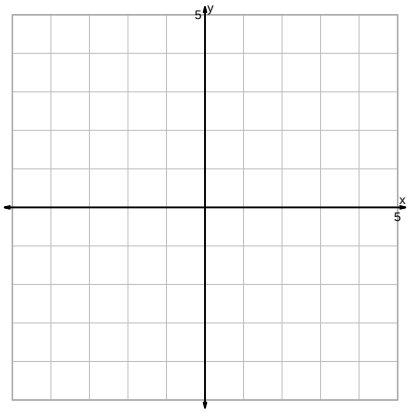


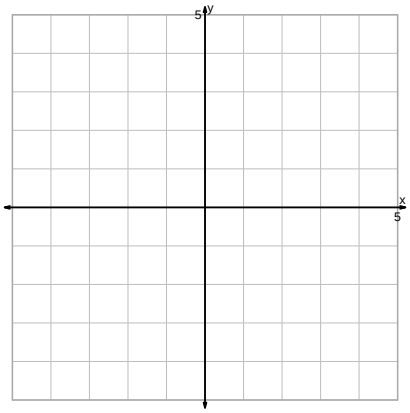


$y = \sqrt[3]{x} - 2$

Question 2 continued. . .

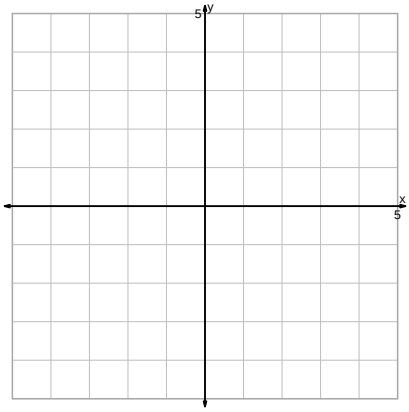
$y = (2x)^3$

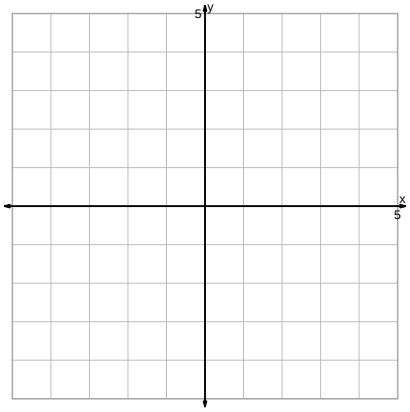




$y = \sqrt{-x}$

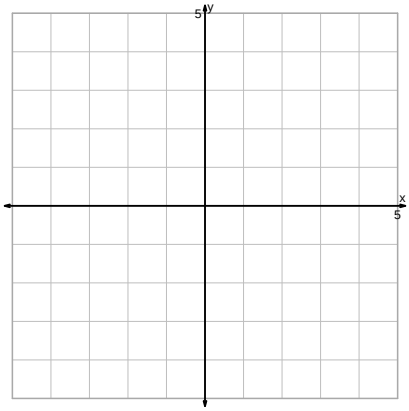
$y = -2^x$

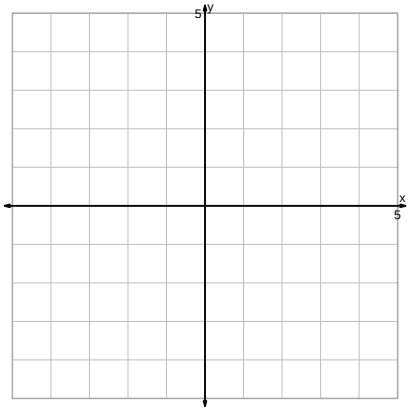




$y = \frac{\sqrt[3]{x}}{2}$

$y = (x+2)^3$

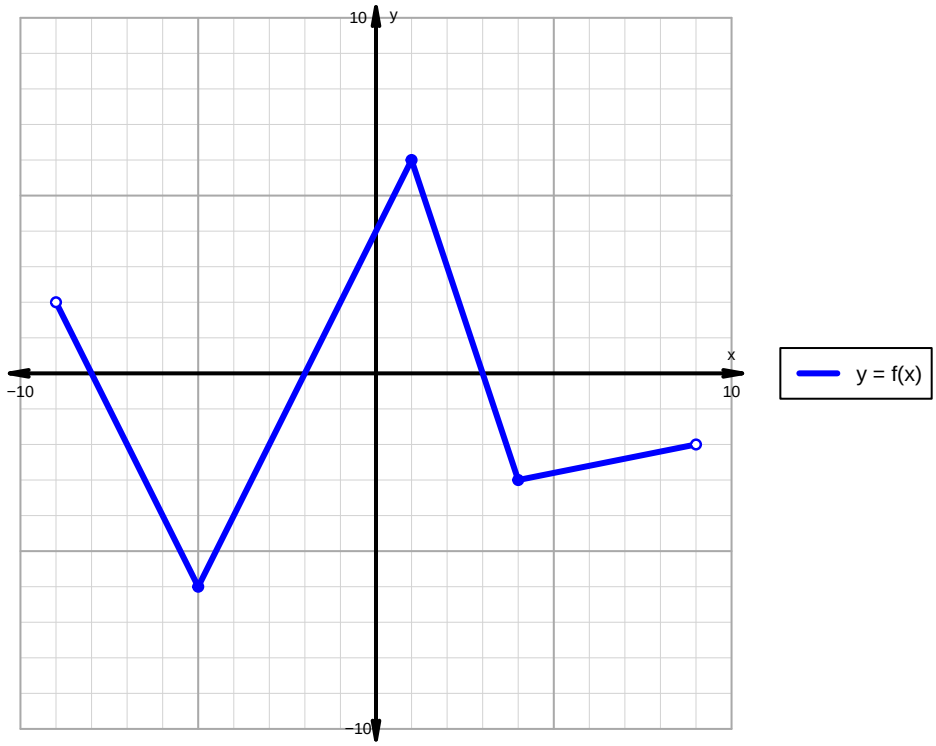




$y = \left(\frac{x}{2}\right)^2$

Question 3 (20 points)

A function is graphed below.



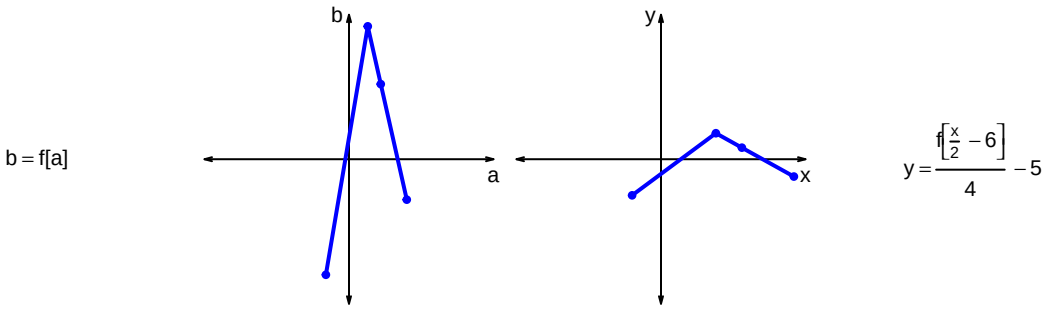
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{2}-6\right]}{4} - 5$ are represented below in a table and on graphs.

a	b	x	y
-16	-80	-20	-25
13	92	38	18
22	52	56	8
40	-28	92	-12



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{2}-6\right]}{4} - 5$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

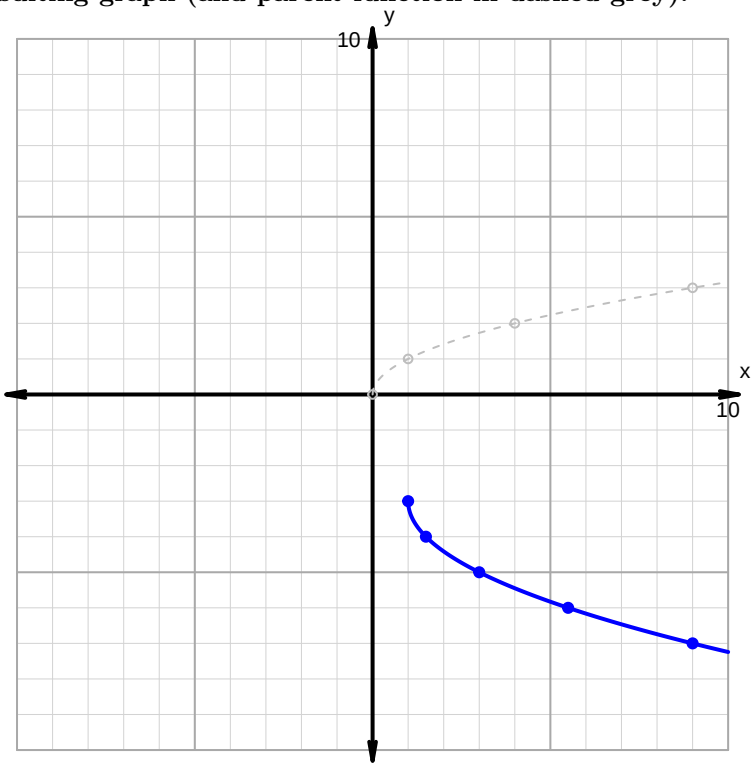
Horizontal transformations

1. Horizontal shrink by factor 2.
2. Translate right by distance 1.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate down by distance 3.

Resulting graph (and parent function in dashed grey):

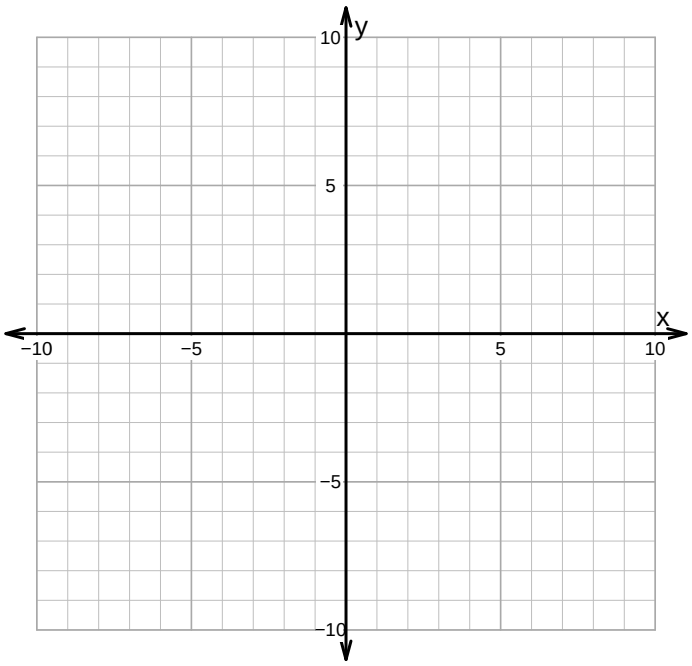


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y \;=\; -2 \cdot |x - 4| + 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	